PROJECT BUSINESS CASE

Project Name: __STAGEnet Infrastructure Services_____   **Project Short Name:** *SIS 2006*_____   **Agency:** _Information Technology Department (ITD)_____   **Business Unit/Program Area:** __Telecommunications_____   **Type of Project:** Major enhancement/upgrade_____   **Date:** ___02/14/2006_____   **Version:** __2.02 (Final)_____

This document is an update of the original SIS 2006 Business Case. It focuses on what was identified as Phase 3, the implementation of the acquired infrastructure.

Project Description:

ITD attempted to rebid the network infrastructure for the state network known as STAGEnet. Three RFPs were released relating to Wireless Voice and Data, Equipment, and a Network RFP containing sections for Backbone, Access, and Internet Access.

No award was given on the Wireless RFP. The state simply renewed the current contract through March of 2007. Equipment contracts were awarded and put into place for three vendors. No other actions are necessary in this phase of the project. Sprint won the Internet Access bid and a new contract is in place. No changes are currently being made to the service provided so there will be no steps in this phase related to that area. DCN, our current provider, was the only provider who bid on the Backbone and Access portions of the contract. Access will not change directly. The vendor will upgrade the equipment in the field for EDLS circuits over the next 5 years but that will be at their timing and has no impact on Phase 3 of this project. There may be some change on how the circuits access the backbone but that change will be managed as part of the backbone upgrade.

So Phase 3 will consist of upgrading the backbone.

Business Need/Problem:

In the years during the current contract, technology has changed and the needs of the state have also increased. The network contract is designed so that the network can grow with the state's needs over the next seven to ten years.

Some of the challenges the state is currently facing are:

- The overall network population and number of sites continue to grow.
- The network core has expanded and requires an architectural review for overall capacity.
- The demand for Virtual Private Networking (VPN) challenges the current design.
- Customer demand for bandwidth continues to grow.
- Video services continue to expand across the state.
- ATM services have been reduced with recent migrations to fiber.
- Universities have to limit Internet access due to current network costs/constraints.
- Applications are requiring increased bandwidth and lower latency (such as ConnectND and the Retirement and Investment Office's TTFR project.)
- Network security continues to demand changes and reconfigurations.
- The backbone is currently only accessible in Bismarck and Fargo while the demand for backbone access in other sites is increasing.

- Homeland security issues have brought new concerns to the network with respect to expanding disaster recovery, redundant connectivity, and possibly additional network hubs.
- IP Telephony and Voice-over IP (VoIP) is beginning to be used in state government.

The new network design should address all of those needs.

The customers impacted by this include all of state government, the North Dakota university system, K-12 entities, and many political subdivisions.

Solution:

The state has chosen to go with a four-node backbone consisting of Bismarck, Fargo, Grand Forks, and Minot. DCN will provide four 1 Gbps Ethernet ports in each of those locations. DCN will provide the core network consisting of an RPR ring expandable up to 10 Gbps of bandwidth. The state has access to provision within the RPR ring as needed. Part of the solution is the design of the aggregate access points connection to the backbone.

Consistency/Fit with Organization's Mission:

NDCC 54-59-08 requires ITD to provide wide area network services to all agencies, counties, cities, and school districts. This contract is for the infrastructure of that service.

Cost Benefit Analysis

Anticipated Benefits:

The implementation of the new network will realize several benefits. More details can be found in the project document DCN Selection.

- Increased bandwidth – Currently the state has about 300 Mbps in bandwidth across the backbone. This solution brings us up to 4 Gbps; an increase of about 12 times.

- Improved provisioning – This solution will allow the state to manage the provisioning as needed within the RPR ring provided to us. This eliminates the delays & costs in requesting those changes from DCN.

- Expanded backbone – Adding Grand Forks and Minot will not only improve service in those cities, but also shorten the amount of time it takes for the other nearby connections to reach the high-speed backbone. This design gives the four core cities the equivalent of a Local Area Network (LAN).

- Scalability – The solution provides the ability to expand the core system from the currently proposed 4 cities to other major cities as needed and funding becomes available.

- Improving availability of services to other DCN customers – DCN felt this model was the one they could best offer to other customers. Therefore with the state again being the anchor tenet for a service solution, they could afford to offer the same service to other entities around the state improving the "connectability" of the state.

Cost Estimate:

Project costs are currently budgeted between $300,000 to $400,000 in equipment expenditures. Other anticipated expenses include Project Management time, staff time, and travel costs.

Cost/Benefit Analysis:

Again, a detailed analysis can be found in the DCN Selection document. In summary:

- Project implementation costs are only a small percentage of the service costs.

- The three primary research universities will be on the backbone and will have a significant increase of bandwidth available to them at a cost significantly lower than providing the same bandwidth levels under the current structure.

- Reduced provisioning costs and timing – The current process entails a fee to make changes to circuits and the inherent delays in having someone else perform the tasks. With the ability of state staff to perform those changes, most of those costs and delays will be eliminated.

- Economic Development – It is impossible to measure a true C/B ratio on this, but DCN feels confident that this solution gives them the most cost effective way to deliver this technological advancement to other clients in the state.

Project Risks:

Risk 1: Site upgrade fails. **Mitigation:** Ensure there are adequate backout procedures to reinstate the original configuration.

Risk 2: Loss of critical staff members. **Mitigation:** Perform detailed planning and scheduling so that alternate staff can be assigned to tasks.

Risk 3: Weather – Some of the work may be scheduled during times where a significant weather event is likely and could impact the ability to travel as needed. **Mitigation:** Add some slack to tasks most likely to be impacted by a weather event.

Risk 4: Migration causes significant outages for customers. **Mitigation:** Any transitions will need to be carefully planned to minimize the impact to the customer. Back-out processes will need to be planned in advance.

Risk 5: Equipment costs are greater than budgeted. **Mitigation:** Plan out equipment costs prior to execution of project.

Risk 6: DCN fails to meet deadline to turn the RPR ring over. **Mitigation:** Plan out several contingency schedules based on compressing timelines from June 1 start to a July 15 start. Failure of DCN to provide the ring by July 15 would likely require a complete re-plan of the project.